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INTER-COMPANY CORRESPONDENCE

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Document # 784

(INSERT NAME)

COMPANY CARBIDE AND CARBON CHEMICALS COMPANY **LOCATION**

Post Office Box P
OAK RIDGE, TENN.

UNCLASSIFIED

TO
LOCATION

K. M. Jones

DATE July 28, 1955

ATTENTION
COPY TO

Anthony, L. L.
Barton, J. C.
Fowlkes, C. C.
Kuehn, P. R.
Kwasnoski, T.
Lang, D. M.
Largy, J. R., (Paducah)
Mahoney, C. H.
Montillon, G. H.
Parsons, J. A.
Rhees, R. C.
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Vanstrum, P. R.
Schwenn, M. F.
Smiley, S. H.
Snyder, H. G. P.
Technical Division K-1005 Files
Technical Division K-1401 Files (K25RC)

ANSWERING LETTER DATE

SUBJECT K-25 Area Water Survey

KLI - 3552

APPROVAL FOR RELEASE

Document: # KLI-3552; Date 7/28/55

Title/Subject K-25 AREA WATER SURVEY, 9-page

document, TKwasnoski to KM Jones.

Approval for unrestricted release of this document is authorized by the Oak Ridge K-25 Site Classification and Information Control Office, Martin Marietta Energy Systems, Inc., PO Box 2003, Oak Ridge, TN 37831-7307.

Virginia Dutton for Arvin Quist 7/3/55
K-25 Classification & Information Control Officer Date

A survey for mercury and manganese in Poplar Creek and Clinch River water has been made for a period of nine days in July to determine trends and daily variations in concentration. Additional chemical and spectrographic analyses have been made on the waters to show other contaminants.

Table I presents the results of the mercury analyses on Poplar Creek and Clinch River water.

Table II presents the results of the manganese analyses on the same samples.

Table III shows the mercury and manganese contents of miscellaneous samples submitted to the laboratory.

Table IV lists the control results obtained on the mercury method during the survey period.

Table V presents a complete analysis of Ohio River, Scioto River and Poplar Creek waters.

~~RESTRICTED DATA~~

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DECLASSIFIED

by authority of: Arvin S. Quist, 1/29/93
K-25 Site Classification Officer

(Authorized Declassifier's name and organization)

or

(Official declassification memo, TIC notice, etc.)
Virginia Dutton 7/3/93

(Person making change)
Ray W. Hall

(Document identification verified by)

Table I presents the results of the mercury analyses on Poplar Creek and Clinch River water.

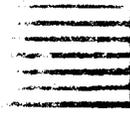
Table II presents the results of the manganese analyses on the same samples.

Table III shows the mercury and manganese contents of miscellaneous samples submitted to the laboratory.

Table IV lists the control results obtained on the mercury method during the survey period.

Table V presents a complete analysis of Ohio River, Scioto River and Poplar Creek waters.

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K-25 Area Water Survey

July 28, 1955

Table VI presents the complete spectrographic analyses of the Poplar Creek samples taken on July 10, 1955.

Table VII lists the spectrographic analyses of miscellaneous water and solid samples taken in connection with the water sampling program.

T. Kwasnoski
Special Analysis Department
Works Laboratory

TK: gmu

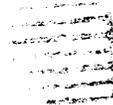


TABLE I

MERCURY CONTENT (PPB.) OF K-25 AREA WATERS

Location	7/6	7/7	7/8	7/9	7/10	7/11	7/12	7/13	7/14	7/15	7/18	7/19	7/20
East Fork of Poplar Creek	156	128	56	86	264	800	34	---	82	0	---	---	---
Poplar Creek Above East Fork Junction	0	49	68	32	46	52	4	---	48	2	---	---	---
Raw Water at K-891	64	172	204	60	86	180	36	---	70	3	---	---	---
K-891 Effluent Treated Water	52	112	232	60	86	198	32	---	78	18	---	---	---
G Loop Supply	68	112	124	52	60	164	18	---	66	26	---	---	---
G Loop Return	68	118	120	48	50	144	96	---	12	22	---	---	---
Clinch River Below Poplar Creek Junction	0	49	44	32	46	124	104	---	60	22	---	---	---
Raw Water at K-1513	0	70	68	52	46	56	96	---	18	22	---	---	---
East End Y-12	---	132*	82*	--	248	264	118	618	---	---	294	4360	324
West End Y-12	----	528*	780*	--	41	39	46	176	----	----	50	32	42

*East end and West end samples are probably reversed.

TABLE II

MANGANESE CONTENT (PPM.) OF K-25 AREA WATERS

Location	7/6	7/7	7/8	7/9	7/10	7/11	7/12	7/13	7/14	7/15	7/18	7/19	7/20
East Fork of Poplar Creek	0.12	0.12	0.11	0.18	0.15	0.08	0.11	-----	0.15	0.18	-----	-----	-----
Poplar Creek Above East Fork Junction	0.10	0.04	0.18	0.25	0.24	0.24	0.18	-----	0.20	0.24	-----	-----	-----
Raw Water at K-891	0.22	0.19	0.08	0.20	0.24	0.16	0.14	-----	0.09	0.08	-----	-----	-----
K-891 Effluent Treated Water	0.18	0.19 < 0.05	0.05	0.14	0.18	0.24	0.25	-----	0.08	0.12	-----	-----	-----
G Loop Supply	0.40	0.38	0.35	0.38	0.47	0.68	0.41	-----	0.46	0.43	-----	-----	-----
G Loop Return	0.40	0.38	0.35	0.39	0.40	0.66	0.42	-----	0.46	0.37	-----	-----	-----
Clinch River Below Poplar Creek Junction	0.12	0.09 < 0.05	0.05	0.08	0.11	0.19	0.05	-----	0.04	0.03	-----	-----	-----
Raw Water at K-1513	0.10	0.10	0.30	0.28	0.16	0.06	0.25	-----	0.25	0.05	-----	-----	-----
East End Y-12	-----	0.10*	1.06*	-----	0.12	0.09	-----	0.10	-----	-----	0.05	0.08	0.11
West End Y-12	-----	0.12*	0.28*	-----	0.12	0.09	-----	0.14	-----	-----	12.1	11.9	12.25

*East end and West end samples are probably reversed.

TABLE III

MISCELLANEOUS WATER SAMPLES ANALYZED FOR MERCURY AND MANGANESE

<u>Location</u>	<u>Date</u>	<u>ppb. Hg</u>	<u>ppm. Mn</u>
Drainage by A Tower	7/12	120	0.14
K-25 Drainage	7/12	88	0.26
K-1410 Drainage	7/12	80	0.18
K-131 Drainage	7/12	104	0.06
K-631 Chem. Pit	7/12	88	2.75
C Tower West Drain	7/12	112	0.28
K-27 Sewage Drain	7/12	76	0.11
Dilution of Drainage Before Clinch Dilution	7/12	68	0.08
K-1131	7/12	168	0.42
1300 Holding Pond	7/12	184	0.22
Zeolite Wash Water G Loop	7/12	304	5.9
Clinch River at Flying Saucer	*	10	
Blank	7/12	10	
Blank + 200 micrograms Cu + 500 micrograms Pb	7/12	10	
Spike (50 micrograms Hg) + 200 micrograms Cu + 500 micrograms Pb	7/12	52	
Sample 301 (J. C. Barton)	7/11	40 38	
Sample 302 (J. C. Barton)	7/18	12 12	
Sample 303 (J. C. Barton)	7/20	0 0	
Sanitary Water K-1004-D	7/12	18	

*Approximately January 1955.

TABLE IV
MERCURY CONTROLS (50 PPB. Hg)

<u>Date</u>	<u>ppb. Hg</u>
7/11	50
7/12	52
7/14	56
7/18	50
7/19	52 56
7/20	56 58
7/21	59 56

INTER-COMPANY CORRESPONDENCE

(INSERT NAME) COMPANY CARBIDE AND CARBON CHEMICALS COMPANY LOCATION Post Office Box P OAK RIDGE, TENN.

TO K. M. Jones
LOCATION K-1101

DATE August 10, 1955

ANSWERING LETTER DATE

ATTENTION

COPY TO Anthony, L. L.
Barton, J. C.
Fowlkes, C. C.
Kuehn, P. R.
Kwasnoski, T.
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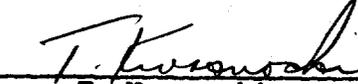
SUBJECT K-25 Area Water Survey

CLI-3552 (Correction)

✓ Technical Division K-1005 Files (K25RC) (4)
Technical Division K-1401 Files (K25RC)

The following correction should be made in "K-25 Area Water Survey" report CLI-3552:

Page 7, the third item in the fifth column, ppm. Mn in Poplar Creek Water, 7/18/55, should read 0.16 instead of 16.


T. Kwasnoski

TK: jd

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KLI-3552

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TABLE V

ANALYSES OF WATER FROM THREE DIFFUSION PLANT AREAS

<u>Analysis</u>	<u>Units</u>	<u>Ohio River</u> <u>7/12/55</u>	<u>Scioto River</u> <u>7/15/55</u>	<u>Poplar Creek</u> <u>7/18/55</u>
pH		7.4	7.4	7.5
Conductivity	micromho	265	468	298
Manganese	ppm.	0.15	0.12	0.16*
Mercury	ppb.	48	20	97**
Iron	ppm.	0.16	0.4	0.19
Silica - Total	ppm.	0.8	11	11
Dissolved	ppm.	0.4		
Calcium	ppm.	31	52	27
Magnesium	ppm.	10	25	10
Hardness	ppm. as CaCO ₃	118	232	108
Alkalinity: P	ppm. as CaCO ₃	0	0	0
Alkalinity: M	ppm. as CaCO ₃	62	158	72
Suspended Solids	ppm.	54	91	17
Dissolved Solids	ppm.	132	339	188
Chloride	ppm. as NaCl	13	44	32
Sulfate	ppm.	39	51	54

* Nine day average of K-891 Raw Water Samples from Table II

** Nine day average of K-891 Raw Water Samples from Table I

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SPECTROGRAPHIC ANALYSES OF POPLAR CREEK SAMPLES TAKEN JULY 10, 1955
(Results Reported in Parts Per Million)

Element	East Fork of Poplar Creek		Poplar Creek above East Fork		Raw Water at K-891		K-891 Effluent Treated Water		G Loop Supply		G Loop Return		Clinch River Below Poplar Creek Junction		Raw Water at K-1513	
Al	2	10	10	0.1	0.1	10	1	40	160	1	2	200	0.6	20	1	60
Ca	100	20	60	---	---	60	---	---	---	---	---	---	---	---	---	---
Cr	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cu	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.6	0.6	0.2	0.2	0.1	0.1
Fe	2	10	10	10	10	10	2	2	6	6	10	10	1	1	2	2
Li	6	---	6	---	---	6	2	2	20	20	20	20	---	---	---	---
Mg	20	20	20	20	20	20	20	20	100	100	100	100	10	10	15	15
Mn	---	0.8	0.4	0.8	0.4	0.4	0.2	0.2	1	1	2	2	---	---	0.2	0.2
Na	40	---	20	---	---	20	10	10	60	60	60	60	---	---	---	---
Si	6	40	20	40	20	20	2	2	20	20	20	20	2	2	6	6
Ti	---	1	1	1	1	1	---	---	---	---	---	---	---	---	---	---

TABLE VII

SPECTROGRAPHIC ANALYSES OF MISCELLANEOUS WATER AND SOLID SAMPLES
(Results Reported in Parts Per Million on Water)

Element	East Fork Junction of Poplar Creek					Coal Creek	
	<u>7/1</u>	<u>7/2</u>	<u>7/3</u>	<u>7/4</u>	<u>7/6</u>	Water <u>7/5</u>	Dust, % <u>7/5</u>
Al	3	2	3	3	1	50	1
B							0.01
Ca	50	50	50	50	20	125	0.3
Cu	0.1	0.1	0.1	0.05	0.04	0.3	0.006
Fe	1	1	1	0.5	0.5	50	1
Li	2	1	2	10	1	----	
Mg	5	5	5	5	6	50	0.2
Mn	0.5	0.4	0.4	0.2	0.2	25	0.02
Na	5	3	5	30	5	20	----
Ni	0.5	0.3	----	0.2	----	2	----
Pb	2	2	1	3	----	----	----
Si	5	5	5	5	2	20	2
Ti	0.1	0.1	0.1	0.1	0.04	----	0.2
V	----	----	----	----	----	----	0.02